

Virginia's 2014-2015 Chesapeake Bay Nutrient and Sediment Reduction Milestones

The Chesapeake Bay TMDL calls for an implementation approach that includes the development and submittal of two-year “milestones” that detail administrative, policy, regulatory and implementation actions that will achieve the benchmark nutrient and sediment reductions called for by 2017 and 2025.

The milestones contained in this document addresses the range of nutrient and sediment sources and are divided into two separate elements. First, the attached table proposes a series of “programmatic milestones” that detail the actions of state agencies and others that will occur over the next two years that either meet TMDL and Virginia’s Watershed Implementation Plan (WIP) commitments, or propose actions that will be taken to enhance existing programs to put Virginia in a better position to meet the TMDL nutrient and sediment reduction targets. A second element of the milestones is the so-called “input deck” that predicts levels of best management practice implementation based on expected funding, historical adoption rates for the various practices, and anticipated program enhancements. It also includes expected wastewater plant discharge amounts. Combined, these implementation actions produce the nutrient and sediment reduction expectations during the milestone period. The implementation levels for land based best management practices are described in the attached spreadsheet.

It is important to remember that these actions and implementation figures are based on information available in the spring of 2014 and they may be adjusted during the milestone period to address new information, changed policy or budget actions or other factors. Our primary objective is the total reductions of nutrients and sediments reaching the Bay and its tidal tributaries. These reduction goals are shown in the attached charts. The exact mix of practices employed at the end of the milestone period may differ from the predictions we are able to make at the beginning of the milestone period due to variations in weather, agricultural commodity trends, developer preferences, and other factors.

If you have questions regarding any elements contained in these documents, please contact James Davis-Martin, Virginia Department of Environmental Quality (james.davis-martin@deq.virginia.gov).

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January 1, 2014 – December 31, 2015 Programmatic Two-Year Milestones

Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
Agriculture including CAFO/AFO				
6/30/2014 6/30/2015	A.1. Conduct continuing education classes relative to nutrient management	6 classes each year	DCR	
11/1/2014 11/1/2015	A.2. Determine resource needs for agricultural BMP implementation through Soil and Water Conservation Districts (Phase I WIP, pg. 65-66, Phase II WIP, pg. 18)	Annually	DCR	
12/31/2014	A.3. Develop specific, targeted educational program for unpermitted dairies (Phase I WIP, pg. 66)		DCR	Direct mailings are being sent to licensed dairies and five additional educational meetings are being planned
6/30/2015	A.4. Advance Healthy Waters program geo-referenced data sets	Update Bay watershed data sets	DCR	Endeavor to update 10-year old data in Bay Watershed portions of the state and develop an on-going maintenance plan.
12/31/2015	A.5. Enhanced funding for livestock exclusion (Phase I WIP, pg. 63)	Fund qualified stream exclusion practices at 100% through FY15	DCR	
12/31/2015	A.6. Continue development of the Resource Management Program and promote adoption in coordination with industry partners (Phase I WIP pg. 59, Phase II WIP pg. 19)	RMPs on at least 40 agricultural operations	DCR	DCR has assembled a marketing workgroup and developed educational materials. The regulations defining compliance have been adopted and outreach efforts have begun headed by a staff person whose time is dedicated to the program
12/31/2015	A.7. Increase the number of nutrient management plans on unpermitted dairies (Phase I WIP, pg. 76)	75% of facilities participating	DCR	DCR expects to execute contracts with plan writing contractors to further this milestone.

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2015	A.8. Track voluntary best management practice collection statewide (Phase I WIP, pg. 54)	BMP dataset for input to EPA-CBPO Watershed Model Progress Run	DCR	
12/31/2015	A.9. Renew relationship with fertilizer companies to encourage and track precision agricultural application (Phase I WIP, pg. 65)	45,000 acres of precision agriculture each year	DCR	
12/31/2015	A.10. Increase nutrient management planning to include 85% of all applicable state-owned land (Phase I WIP, pg. 61)	780,000 acres agricultural nutrient management each year	DCR	
12/31/2015	A.11. Report competitive grant project achievements, including BMP data to be credited in the Bay model	Reportable 2007-2014 BMP data digitized, analyzed and included for VA accomplishments.	DCR	
12/31/2015	A.12. Develop agricultural nonpoint source assessment data to be used for Ag needs assessment, 305(b) report, NPS Management Plan, Chesapeake Bay and Virginia Waters Clean Up Plan and other reports	Data developed, analyzed and reported to DEQ	DCR	
12/31/2015	A.13. Spatial reporting of nutrient management plan data	Tracking module to report spatially	DCR	
10/31/2014	A.14. Assess 48 VPA permitted facilities that have applied for VPDES CAFO permits to determine if they require VPDES permits (Phase I WIP pg. 74, Phase II WIP pg. 18)	Assess 48 facilities	DEQ	

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2015	A.15. Convert applicable CAFO VPA permits to VPDES permits (Phase I WIP pg. 74, Phase II WIP pg. 18)	3 VPDES permits issued	DEQ	
12/31/2015	A.16. Complete evaluations of the remaining small AFOs in Virginia's portion of the Chesapeake Bay watershed in accordance with the Small AFO Strategy developed in cooperation with VDACS (Phase I WIP, pg. 76)	Completion of evaluation and, if necessary appropriate remedies initiated	DEQ/ VDACS	Approximately 460 small AFOs remain to be evaluated out of the 800 identified in the WIP.
Urban including MS4				
7/1/2014	U.1. Continue development of the Construction General Permit Coverage System as a management tool for the Virginia Stormwater Management Program (VSMP) regulations. The system will allow local entry of Construction General Permit registration statement and notice of termination information, including urban and suburban BMPs, into the database for regulated land-disturbing activities. This will allow DEQ to consolidate locality data for submission to EPA through the NEIEN (Phase I WIP, pg. 96)	Construction General Permit Coverage System	DEQ	Beta testing to begin no later than June 1, 2014 by selected localities representing a cross section of Virginia local governments
7/1/2014	U.2. Issue TMDL Action Plan Guidance for MS4s	Guidance Memorandum	DEQ	

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2014	U.3. Continue development of the Construction General Permit Coverage System as a management tool for the Virginia Stormwater Management Program (VSMP) regulations. Update the system to allow local entry of urban and suburban BMPs for unregulated land-disturbing activities. This will allow DEQ to further consolidate locality data for submission to EPA through the NEIEN (Phase I WIP, pg. 96)	Enhanced Construction General Permit Coverage System	DEQ	
12/31/2014 10/1/2015	U.4. Complete development of a system to track, verify and report homeowner installed BMPs. The system will capture and report data in a format suitable for state Bay Model progress submissions	Homeowner BMP Tracking System – “SMART” Stormwater Management and Restoration Tracker Report Homeowner BMPs for 2015 progress	Alliance for the Chesapeake Bay - Virginia Office/DEQ	
12/31/2014 12/31/2015	U.5. Issue 3 final MS4 individual permits and draft the remaining individual permits with the cooperation of the permittee, EPA, and other stakeholders. Reissuing all remaining MS4 permits by the end of 2015 (Phase I WIP, pg. 93)	3 final Phase I MS4 permits issued, all remaining individual MS4 permits in draft All final permits issued	DEQ	

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
7/1/2014 9/30/2014	U.6. Review MS4 program plans and issue permit coverage to the small MS4s newly designated based on the 2010 census	8 new localities or municipally owned facilities covered Remaining 8 newly designated MS4s covered		
12/31/2014	U.7. Achieve reductions from new development and redevelopment using urban BMPs through ramped up compliance with the Virginia Stormwater Management permit (VSMP) and the stormwater provisions of the Chesapeake Bay Preservation Act (CBPA)	Compliance strategy, audit and inspection guidance	DEQ	Strategy will be consistent with the national strategy (i.e., 2007 Clean Water Act National Pollution Discharge Elimination System Compliance Monitoring Strategy for the Core Program and Wet Weather Sources)
12/31/2015	U.8. Continue to implement contractor-applicator training and certification regulation, including a training and certification program for the proper handling, use, and application of fertilizer to nonagricultural lands. Establishes recordkeeping requirements for certified applicators (Phase I WIP, pg. 90)	Implement regulations	VDACS	2 VAC 5-405, <i>Regulations for the Application of Fertilizer to Nonagricultural Lands</i> , became effective February 1, 2012. Four (4) courses of training have been approved. One such course was developed jointly by Virginia Cooperative Extension (Virginia Tech), VDACS, and DCR, and it is available online at no cost to participants. 1,219 individuals have received credentials as Certified Fertilizer Applicators.

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2015	U.9. Nutrient Management on Urban Turf – update standards and criteria per 2013 legislation (Phase I WIP, pg. 90)	Train 110 urban nutrient management planners, 35 VT extension specialists and 600 VDACS-certified fertilizer applicators	DCR	
12/31/2015	U.10. Nutrient management on urban turf – residential sector	Implement pilot project in 6 Phase II MS4-targeted communities	DCR	
12/31/2015	U.11. Nutrient management on urban turf – golf courses; begin development of cost-share program for golf course nutrient management (Phase I WIP, pg. 90)	Urban nutrient management plans completed on 11,000 acres of golf courses during the milestone period	DCR	Grants have been awarded for nutrient management plans on up to 100 golf courses. Another grant will be awarded to increase golf course plans in mid August of 2014
12/31/2015	U.12. Nutrient management on urban turf – state-owned facilities (Phase I WIP, pg. 90)	85% of state owned facilities with active plans	DCR/ VDACS	A nutrient management plan has been adopted for Department of Transportation properties. VDOT will assess the acreage that receives nutrients in new constructions and maintenance and will report such acreage.
12/31/2015	U.13. Improve tracking and reporting of urban nutrient management including state-owned facilities and local government lands (Phase I WIP, pg. 90)	60,000 acres of urban nutrient management each year	DCR/ VDACS	

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
7/1/2014 12/31/2015	U.14. Continue to implement amendments to the Virginia Fertilizer Law to protect water quality (Phase I WIP, pg. 90)	Implement new provisions	VDACS	<p>Provisions regarding zero phosphorous in lawn maintenance fertilizer, as well as certain deicing agents containing various forms of nitrogen or phosphorous became effective December 31, 2013. VDACS is seeking to ensure compliance through label review at the time of product registration, and through marketplace inspections.</p> <p>As of mid-March 2014, inspectors in VDACS' Office of Plant Industry Services have visited 87 different retail locations and inspected 72 different products. Only three deicing products were found to contain urea, and those products were grandfathered under the statute.</p> <p>Provision regarding the slowly-available nitrogen content of lawn maintenance fertilizer and the application thereof become effective July 1, 2014.</p>
12/31/2015	U.15. Establish pollutant removal efficiencies for typical roadway vegetated shoulders and drainage conveyances thereby promoting the use of such practices over those employing impervious materials		VDOT	VDOT will continue its interest in establishing pollutant removal efficiencies for these practices.

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2015	U.16. Provide DEQ stormwater management training to relevant VDOT stormwater personnel and contractors performing BMP review and inspection tasks		VDOT	
12/31/2015	U.17. Revise VDOT guidance documents to incorporate and promote the use of low impact development techniques and other innovative stormwater BMPs in roadway projects	Multiple guidance documents	VDOT	
12/31/2015	U.18. Continue “Stormwater Management Comparative Study of Porous Asphalt for I-66 and Route 234 Bypass Park & Ride Facility” to determine /develop maintenance requirements for permeable asphalt pavement	Study	VDOT	
Onsite Sewage Systems				
12/31/2014	OSS.1. Implement operation and maintenance (O&M) portions of final <i>Alternative Onsite Sewage Systems (AOSS) Regulations</i> (12VAC5-613) (Phase I WIP, pg. 106)		VDH	Implementation of the O&M requirements is underway. VDH is finalizing an implementation manual to improve consistency in application of the regulations.
12/31/2014	OSS.2. Train agency staff on new inspection, compliance, and enforcement procedures for alternative onsite sewage systems		VDH	Training will be offered to agency staff when the implementation manual is completed.
12/31/2014	OSS.3. Develop a Global Positioning System (GPS) guidance policy for VDH staff in order to facilitate a consistent approach to geolocating onsite sewage systems in the Bay watershed	Capture location of all new AOSS installed in the Bay watershed during the milestone period	VDH	VDH will focus on geolocating alternative onsite sewage systems installed in the Bay watershed.

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2015	OSS.4. Work with DEQ and local governments to capture and report the number of septic tank pump-outs that occur as a result of the Chesapeake Bay Preservation Act requirements (local ordinances), voluntary efforts and repairs throughout the Bay watershed	36,000 septic tank pump-outs each year	VDH/ DEQ	The target values are a combination of the annual pump-out data submitted to DEQ by the localities within the Chesapeake Bay Preservation Act area, and an annual estimate based on VDH data of the pump-outs performed voluntarily or as part of permitted repair activities outside Bay Act localities.
12/31/2015	OSS.5. Work with DEQ and local governments to capture and report the number of connections to public sewer	600 sewer connections during the milestone period	VDH/ DEQ	The Virginia Environmental Information System (VENIS) database is capable of tracking onsite facilities that are connected to public sewer when the information is received from the locality. However, there is no requirement for the information to be reported to VDH. Discussions are planned to solicit the information from the wastewater authorities.
12/31/2015	OSS.6. Report the number of alternative onsite sewage systems (AOSS) meeting the current BMP for 50% reduction, and the new BMPs for 20%, 38%, and 69% reduction, pending their final approval by the Chesapeake Bay Program	2,870 lbs TN load reduction over baseline conditions at the edge of drainfield during the milestone period	VDH	The nitrogen requirements in the Virginia AOSS regulation became effective in December 2013.
12/31/2015	OSS.7. VDH continues to operate the VENIS database and look for ways to improve functionality		VDH	VDH continues to conduct extensive quality assessment and quality control of the data within the VENIS database in order to improve our ability to deliver reliable information and to better track progress.

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2015	OSS.8. Work with EPA and other TMDL stakeholders to better predict nitrogen losses through various soil types and treatment unit combinations in order to improve the accuracy of the Chesapeake Bay Watershed Model predictions for the onsite sector, especially for systems located above the geologic fall line		VDH	VDH commits to participation in workshops and stakeholder group meetings to advance the initiative.
Forest				
12/31/2015	F.1. Continue with BMP training sessions for forest harvesting contractors, Professional Foresters and forest landowners	4 training sessions each year	VDOF	Through VDOF programs, cooperation with the SHARP Logger Program and Cooperative Extension.
12/31/2015	F.2. Develop new on-line BMP training program for harvest contractors through VT Sustainable Harvesting And Resource Professional (SHARP) Logger Program focusing on underutilized harvesting BMPs and considerations for biomass harvesting practices	1 on-line training program each year	VDOF	
12/31/2015	F.3. Continue BMP implementation monitoring to determine BMP rates being applied to forest harvest sites within the Bay Watershed through funding provided by a CBRAP Grant		VDOF	Monitoring meets the criteria set out in the Southern Group of State Foresters BMP Implementation Monitoring Protocol.
12/31/2015	F.4. Provide cost-share to forest harvesting contractors to implement BMPs (Phase I WIP, pg. 110)	90% of harvested area treated	VDOF	Assumes funding from WQIF is made available

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2015	F.5. Continue enhanced enforcement of the Virginia Silvicultural Water Quality Law in the Chesapeake Bay Watershed utilizing CBRAP grant funding	Enforcement on 100% of harvest sites based upon agency established procedures and harvest inspection of each harvest site	VDOF	
12/31/2015	F.6. Provide cost-share funding to those landowners to establish riparian forest buffers that would not otherwise qualify for cost-share funding through federal programs (Phase I WIP, pg. 62)		VDOF	Assumes funding from WQIF is made available.
12/31/2015	F.7. Slow the loss of forestland conversion and associated water quality benefits resulting from necessary municipal infrastructure development (Phase II WIP, pg. 33)	2000 acres of avoided forestland conversion achieved by integrating DOF forestland loss mitigation assessments of proposed development projects into state environmental impact review (EIR) processes	VDOF	VDOF initiated a voluntary mitigation program in November 2012 funded by a USFS grant that includes broader, more comprehensive participation in DEQ and VDOT EIR processes.
12/31/2015	F.8. Open Field Targeting Initiative – target open lands in Central Virginia that are not currently being used in an agricultural capacity or are otherwise abandoned. Identify landowners and contact for tree planting (Phase I WIP, pg. 62)		VDOF	Working in a 4 county area of Central Virginia to identify and contact landowners that have been targeted for tree planting projects

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2015	F.9. Identification of incentives and drivers to assist communities directing growth away from key forestland assets such as groundwater recharge areas, intact and productive forests, and wildlife corridors to ensure forestland economic and ecosystem values are considered and weighed against competing land use options in land development decisions (Phase II WIP, pg. 34)	List of incentives and drivers with action plan for implementing vetted through discussion with communities	VDOF	Contingent on receipt of USFS source water protection grant for required staffing and financial resources or from other sources TBD.
12/31/2015	F.10. Initiation of dialogue with EPA, Bay jurisdictions, and others to determine the feasibility of achieving credited TMDL nutrient or sediment reductions from conserving existing forestland in the context of the Chesapeake Bay model (Phase II WIP, pg. 34)	Convene a group comprised of EPA, Bay jurisdictions, state agencies, and other stakeholders to initiate a dialogue that focuses on valuing conservation of existing forestland in the Chesapeake Bay model	DEQ/VDOF	This would have to be a collaborative effort contributed to and funded by multiple sources and coordinated with the other Bay partners. VDOF role would be as technical assistance provider.
12/31/2015	F.11. Continue to focus riparian forest buffer establishment efforts in Potomac River Watershed and expand these efforts to the northern piedmont through the establishment of “Buffer Teams” composed of NRCS, FSA, DCR, VDOF, SWCD and other partners through a focused riparian forest buffer - GIS targeting / marketing initiative (Phase I WIP, pg. 62)	Work through a new 4 County area in Central Virginia in the same way targeting was accomplished in a 4 county Shenandoah Valley area	VDOF	Funding is currently being provided through a U. S. Forest Service Bay Grant.

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2015	F.12. Permanently conserve forestland through permanent conservation easements or acquisition (Phase II WIP, pg. 34)	Conserve 6000 acres across the Virginia portion of the Watershed	VDOF	VDOF currently administers a robust conservation easement and land acquisition program focused on keeping the forestland intact and undivided, enabling landowners to manage their forestland for timber products and environmental values.
Industrial Stormwater				
7/1/2014	IS.1. Provide coverage for an estimated 900 facilities under reissued industrial stormwater GP including effluent nutrient monitoring and offsetting of new or expanding industrial SW nutrient loads	Permit registrations	DEQ	
7/1/2014	IS.2. Begin 2 year program of effluent nutrient monitoring at permitted industrial stormwater facilities in the Bay watershed	Industrial stormwater effluent monitoring program	DEQ	Activity extends beyond this milestone period.
Wastewater				
12/31/2014	W.1. Initiate reissuance of watershed GP including reduced WLAs in the James River basin as indicated in TMDL Appendix X	Publish NOIRA	DEQ	
Extractive				
12/31/2014 12/31/2015	E.1. Enhance coordination between DEQ and DMME to collect and report BMPs installed on active mine sites as well as reclamation of active and orphaned mines		DMME/DEQ	
12/31/2015	E.2. Ensure compliance with permit conditions for proper site planning and best management practice implementation	24,000 acres of Erosion and Sediment Control on Extractive Lands each year	DMME	

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2015	E.3. Document and report reclamation of active and orphaned mine sites	1,000 acres of mine reclamation during the milestone period	DMME	
Local Engagement				
12/31/2014	LE.1. Develop a communications strategy for engaging local stakeholders in WIP implementation, milestone planning and progress reporting (Phase II WIP, pg. 42)		DEQ	
12/31/2015	LE.2. Complete comprehensive evaluation of historic implementation data to assess data quality and update accordingly for use in v6.0.model calibration		DEQ	
Federal Facilities				
10/1/2014 10/1/2015	FF.1. Engage federal agencies with facilities in Virginia to encourage participation in Bay TMDL planning, implementation and reporting as outlined in EPA guidance	Participation by all federal facilities larger than 500 acres	DEQ	There are more than 200 federal facilities in Virginia, 74 are larger than 500 acres in size.
Trading and Offsets				
6/30/2015	TO.1. Expansion of Existing Nutrient Credit and Stormwater Offset program (Phase I WIP, Page 12)	Promulgate nonpoint source credit certification regulation	DEQ	
12/31/2014	TO.2. Begin development of online nutrient credit registry		DEQ	
2/1/2016	TO.3. Conduct study on the cost-effectiveness of nutrient credit use as an option for VDOT stormwater permitting requirements	Report	VDOT	Activity extends beyond this milestone period.

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
4/1/2014 4/1/2015	TO.4. Report results of wastewater nutrient monitoring and credit availability for the prior year's annual loads. Reports will be made available on DEQ's nutrient trading webpage	Report	DEQ	
7/1/2014 7/1/2014	TO.5. Publish notice of all nutrient credit exchanges and purchases for the previous calendar year and make all documents relating to the exchanges available to any person requesting them. Reports will be made available on DEQ's nutrient trading webpage	Report	DEQ	
James River Phased Implementation/Chlorophyll Study				
12/31/2015	JR.1. Define relationships between harmful algal blooms (HAB), indicators and designated use (DU) attainment (Phase I WIP, pg. 7 – 11)	Principal Investigator reports	DEQ	
12/31/2015	JR.2. Continue to hold annual meetings of the Stakeholder Advisory Panel		DEQ	
11/30/2014 5/31/2015	JR.3. Continue development of empirical relationships between HAB measures and designated use attainment	Science Advisory Panel recommendations	DEQ	
7/31/2015	JR.4. Utilize model to assess chlorophyll-a criteria alternatives, including the existing standards	Scenario and Alternatives Analysis Report	DEQ	

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Target Date	Milestone (WIP page reference)*	Deliverable	Lead Agency	Comments/Status Updates
12/31/2015	JR.5. Continue development of models for indicators, nutrient inputs and HABs (Phase I WIP, pg. 9)	Final Model Study Report	DEQ	
* As part of the adaptive management process for achieving water quality goals, jurisdictions may submit programmatic milestones that modify, are in place of, or are in addition to milestones listed in their WIPs so long as the jurisdiction can demonstrate that they will be as effective toward meeting water quality goals.				

Agriculture Practices	Unit	2009 Progress	2013 Progress	2015 Milestone	2025 WIP
Nutrient Application Management on Crop	acres	515,275	545,873	0	530,947
Decision Agriculture	acres	0	11,139	50,000	157,869
Enhanced Nutrient Application Management	acres	0	0	750000*	67,715
Traditional+Enhanced Nutrient Application Management	acres	515,275	557,012	800,000	756,531
Nutrient Application Management on Pasture	acres	59,986	70,855	0	406,550
Enhanced Nutrient Application Management on Pasture	acres	0	0	100,000*	0
Conservation-Till Specialty Crops	acres	0	0	2,505	25,012
Continuous NoTill	acres	33,995	0	0	304,400
High Residue Tillage	acres	0	95,471	119,552	0
Other Conservation-Till	acres	375,976	288,053	296,448	210,678
Conservation Tillage w/ Continuous NoTill	acres	409,971	383,524	416,000	515,078
Cover Crop	acres	53,946	107,722	129,364	232,649
Commodity Cover Crop	acres	25,869	31,931	46,944	76,210
Commodity+Cover Crop	acres	79,815	139,653	176,308	308,859
Pasture Alternative Watering	acres	20,531	72,402	75,000	13,917
Prescribed Grazing	acres	239,065	298,007	346,050	534,265
Precision Intensive Rotational Grazing	acres	0	0	0	0
Horse Pasture Management	acres	0	35	35	23,570
Stream Access Control with Fencing	acres	33,866	52,390	58,460	56,029
Pasture Management Composite	acres	293,462	422,834	479,545	627,781
Forest Buffers on Fenced Pasture Corridor	acres	13,678	13,679	13,732	19,623
Grass Buffers on Fenced Pasture Corridor	acres	19,918	13,959	22,835*	31,927
NM, Tillage, Cover Crop and Pasture Management Composite	acres	1,392,104	1,601,516	2,008,420	2,666,349
Forest Buffers	acres	3,154	6,028	6,114	79,814
Wetland Restoration	acres	214	420	420	19,215
Land Retirement	acres	81,605	92,427	94,536	122,824
Grass Buffers	acres	10,362	13,209	16,142*	109,032
Tree Planting	acres	16,216	29,559	30,405	107,108
Carbon Sequestration	acres	0	0	0	0
Conservation Plans	acres	926,165	1,131,522	1,349,548	1,883,053
Water Control Structures	acres	0	182	159	700
Crop Irrigation Management	acres	0	0	26	0
Liquid & Poultry Injection	acres	0	0	0	0
Ditch Filters	acres	0	0	0	0
Capture & Reuse	acres	0	0	0	3,753
Crop, Hay and Pasture Practices Composite	acres	2,429,822	2,874,862	3,489,627	4,991,848

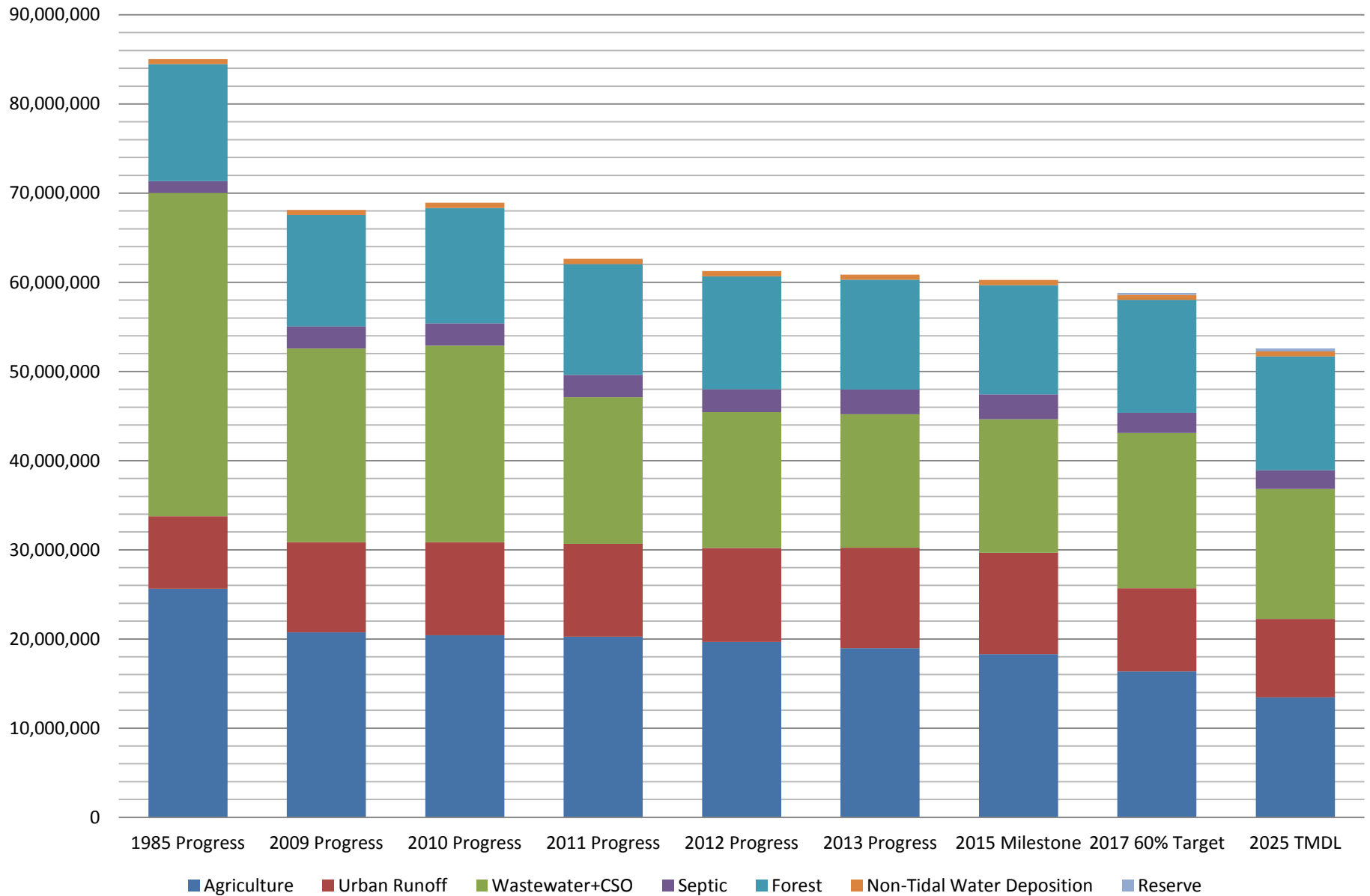
<i>Agriculture Practices (continued)</i>	Unit	2009 Progress	2013 Progress	2015 Milestone	2025 WIP
NonUrban Stream Restoration	feet	19,332	320,141	316,868	104,528
Livestock Waste Management Systems	AU	94,500	122,632	158,742	600,052
Poultry Waste Management Systems	AU	130,818	152,057	145,178	262,006
Livestock+Poultry Waste Management Systems	AU	225,318	274,689	303,920	862,058
Livestock Mortality Composting	AU	0	3,251	6,489	5,415
Poultry Mortality Composting	AU	0	6,318	7,141	17,607
Livestock+Poultry Mortality Composting	AU	0	9,569	13,630	23,022
Barnyard Runoff Control	acres	525	1,072	1,156	5,488
Loafing Lot Management	acres	0	302	272	0
Barnyard Runoff Control & Loafing Lot Management	acres	525	1,374	1,428	5,488
Manure Transport Outside CBWS	tons	0	2,879	6,000	148,500
Manure Transport Within CBWS	tons	0	11,182	0	43,500
Manure Transport	tons	0	14,061	6,000	192,000
Poultry Phytase	% AU @ % TP reduction	100% @ 16%	100% @ 16%	100% @ 16%	100% @ 25%
Swine Phytase	% AU @ % TP reduction	0	0	100% @ 35%	100% @ 35%
Dairy Precision Feeding TN	% AU @ % TN reduction	0	0	0	100% @ 24%
Dairy Precision Feeding TP	% AU @ % TP reduction	0	0	0	100% @ 25%
Ammonia Emission Reductions (Alum)	% AU @ % TN reduction	0	4% @ 50%	0	46% @ 50%
Ammonia Emission Reductions (Biofilters & Lagoon Covers)	% AU @ % TN reduction	0	0	0	0

Urban/Suburban Practices	Unit	2009 Progress	2013 Progress	2015 Milestone	2025 WIP
Wet Ponds & Wetlands	acres	156,707	177,648	179,237	177,773
Dry Ponds	acres	136,123	153,427	153,550	85,554
Extended Dry Ponds	acres	64,820	74,249	73,876	160,881
Infiltration Practices	acres	1,588	1,925	1,957	69,127
Filtering Practices	acres	4,927	6,188	6,203	65,868
BioRetention	acres	0	388	835	22,352
BioSwale	acres	0	3	16	1,144
Permeable Pavement	acres	0	2	5	52
Vegetated Open Channel	acres	0	5	15	3,283
Stormwater Management Composite	acres	364,165	413,834	415,694	586,033
Erosion and Sediment Control	acres	26,975	13,203	17,524	29,948
Extractive Erosion and Sediment Control	acres	0	0	24,000	2,974
Forest Conservation Act	acres	0	1,006	0	14,128
Impervious Surface & Urban Growth Reduction	acres	3	115	131	24,779
Urban Forest Buffers	acres	0	76	77	4,115
Urban Tree Planting	acres	0	0	2	799
Urban Nutrient Management	acres	20,934	28,856	60,000	517,058
Urban Phosphorus Legislation	% acres @ % TP reduction		100% @ 70%	100% @ 70%	
Urban Stream Restoration (feet)	feet	0	187,378	187,378	116,399
Street Sweeping (lbs)	lbs	0	218,677	250,000	0
Street Sweeping	acres	632	0	0	24,040
Abandoned Mine Reclamation	acres	970	797	1,797	29,247
Urban/Suburban Practices Composite	acres	413,047	457,888	519,226	1,209,081
Septic Connections	systems	2	7	607	42,224
Septic Denitrification	systems	0	400	600	81,433
Septic Pumping	systems	14,083	25,100	35,908	68,432
Resource Practices					
Forest Harvesting BMPs	acres	187,293	70,075	82,430	87,305
Dirt&Gravel Road E&S (feet)	feet	0	1,738	0	4,807
Non-Point Source Composite BMP Units		3,703,101	4,913,848	5,726,847	9,021,746

BMPs indicated with an * in the 2015 Milestones include surrogate, placeholder or interim BMPs.

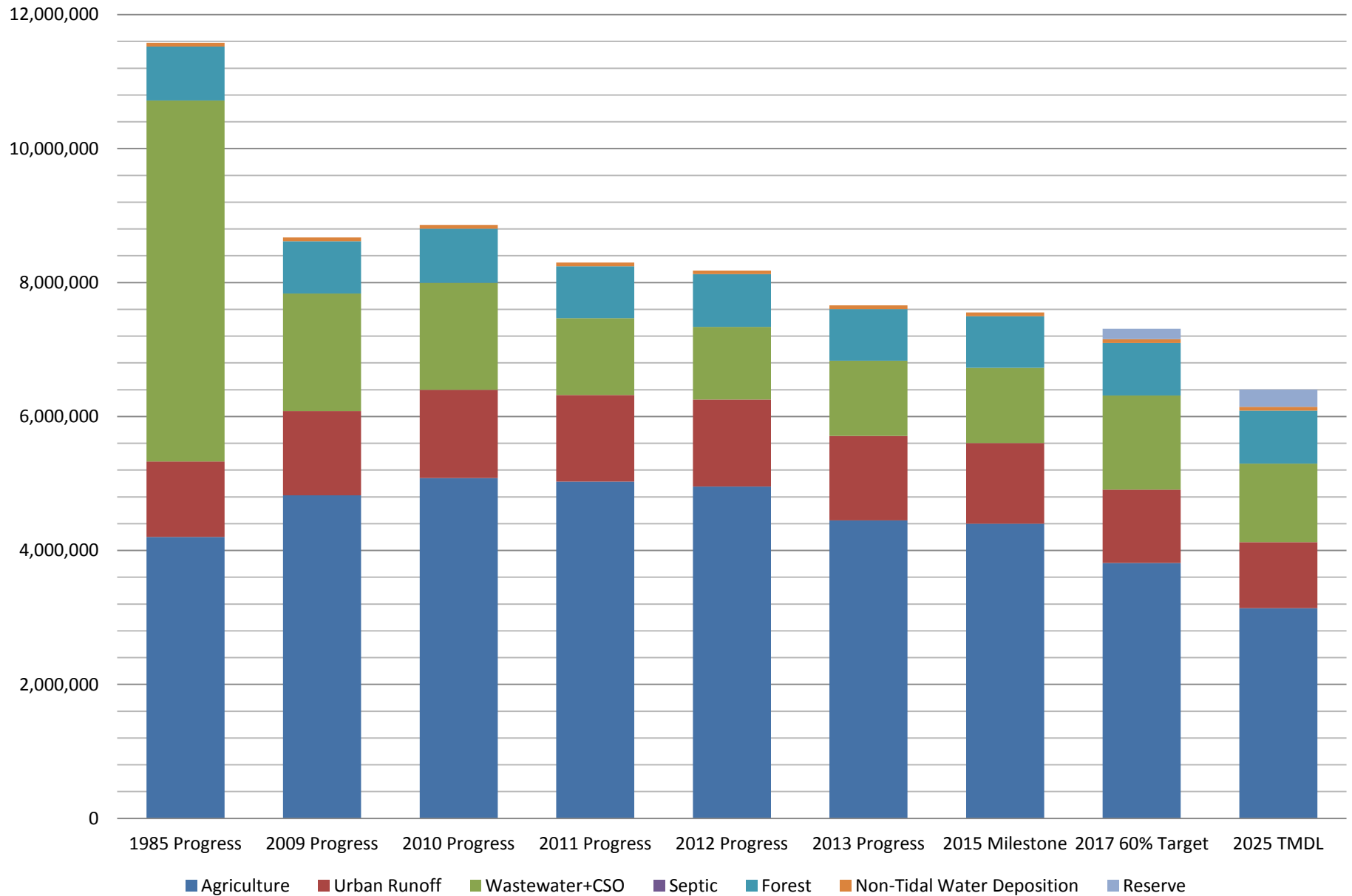
Virginia Estimated Delivered Nitrogen Loads

Lbs TN/Year CBWM v5.3.2



Virginia Estimated Delivered Phosphorus Loads

Lbs TP/Year CBWM v5.3.2



Virginia Estimated Delivered Sediment Loads

Lbs TSS/Year CBWM v5.3.2

